NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

IRRIGATION PIT OR REGULATING RESERVOIR
IRRIGATION PIT

(no.)
CODE 552A

DEFINITION

A small storage reservoir constructed to regulate or store a supply of water for irrigation.

PURPOSE

To collect and store water until it can be used beneficially to satisfy crop irrigation requirements.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies only to sites meeting all the following criteria and conditions:

1. The existing water supply available to the irrigated area is insufficient to meet conservation irrigation requirements during part or all of the irrigation season.

2. The construction of an irrigation pit is the most practical means of obtaining a needed additional supply of water.

3. An adequate supply of good quality water is available for storage from surface runoff, streamflow, or from a subsurface source.

4. Topographic, geologic, water table, and soils conditions at the site are satisfactory for the feasible development of the irrigation pit.

5. If surface runoff enters the pit, the contributing drainage area is or can be protected against erosion so that normal sedimentation does not materially shorten the planned life of the pit.

6. The contemplated excavation of the pit and storage of water are permitted by applicable state statutes and regulations. For pits excavated to intercept unconfined groundwater, the cooperator (individual, group, or unit of government) shall contact the Department of Land and Natural Resources, State of Hawaii, and make an application for a well permit according to Regulation 9, Department of Land and Natural Resources, State of Hawaii. Any construction operations shall not commence until an appropriate well permit has been issued.

Scope

This standard applies to open pits excavated below the ground surface to intercept and store either surface water or unconfined groundwater for irrigation. It applies to pits if part of the water is impounded above natural ground, provided that the depth of water above the ground surface, as measured at the spillway crest elevation, does not exceed 3 feet.

This standard establishes the minimum acceptable level for the planning and functional design of irrigation pits. It does not include detailed criteria or construction specifications for individual pits or components of the storage facility.

CRITERIA

Capacity. Irrigation pits shall be designed to have a usable capacity sufficient to satisfy irrigation requirements in the design area throughout the growing season of the crop or crops being irrigated. In computing capacity requirements, due consideration shall be given where applicable to groundwater inflow, surface runoff, precipitation, evaporation and seepage. Additional capacity shall be provided as necessary for sediment storage. The usable capacity of a pit that depends wholly on groundwater as a source of supply shall be that part of the pit that is below the static water level.

Pit Design. Irrigation pits shall be designed according to the design criteria for excavated ponds in the Hawaii Standard for **Pond** (378).

Outlet Works. Suitable outlet works shall be provided for the controlled release of irrigation water. The capacity of the outlet works shall be no less than that required to provide the outflow rate needed to meet peak period irrigation system demands.

PLANNING CONSIDERATIONS FOR WATER QUANTITY AND QUALITY

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

2. Effects on downstream flows or aquifers that would affect other water uses or users.

3. Potential for irrigation water management.

Water Quality

1. Effects on erosion and the movement of sediment, pathogens, and the soluble and sediment-attached substance carried by runoff.

2. Effects on the movement of dissolved substances to ground water.

3. Short-term and construction-related effects on the quality of downstream water courses.

4. Potential of uncovering or redistributing toxic material.

5. Effects on wetlands or water-related wildlife habitats.

6. Effects on the visual quality of water resources.

CONSTRUCTION PLANS

Plans for irrigation pits shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended purpose.

Plans for irrigation pits should include a plan layout and sufficient cross sections to show the lines, grades, and elevations of the area to be excavated.

Irrigation pits shall be constructed according to the Hawaii Specifications for the practice **Pond** (Code 378).